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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/635,832	08/09/2000	Shunpei Yamazaki	07977/182002/US3413D1	6795

26171 7590 04/20/2005

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EXAMINER	
TOLEDO, FERNANDO L	
ART UNIT	**PAPER NUMBER**
2823	

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

SM

Office Action Summary	Application No.	Applicant(s)	
	09/635,832	YAMAZAKI ET AL.	
	Examiner	Art Unit	
	Fernando L. Toledo	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-132* is/are pending in the application.

4a) Of the above claim(s) *See Continuation Sheet* is/are withdrawn from consideration.

5)☒ Claim(s) *58,62,66,70,74,78,82,86,90,94,98,102,106,110,114,118,122,126 and 130* is/are allowed.

6)☒ Claim(s) *61,65,69,73,77,81,85,89,93,97,101,105,113,117 and 129* is/are rejected.

7)☒ Claim(s) *121 and 125* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 08/931,697.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 61, 85 and 93 are rejected under 35 U.S.C. 102(b) as being anticipated by Ozaki et al. (U. S. patent 5,028,976).

In re claim 61; Ozaki, in the U. S. patent 5,028,976; figures 1 – 9 and related text, discloses at least one first transistor 2; at least one second transistor 3 over the at least one first transistor (Figure 2); wherein each of the first and second transistors includes: a channel forming region 17; a source region (12 or 13); a drain region (13 or 12); and a gate electrode; wherein several of carrier moving region and several of impurity regions includes an impurity region element are included at least in the channel forming region (Column 3, Lines 55 – 65).

3. In re claim 85; Ozaki discloses wherein the channel forming region, source region and drain region includes single crystal silicon (Column 3, Lines 55 – 65).

4. In re claim 93; Ozaki discloses wherein the second layer has an SOI structure 18.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 113, 117 and 129 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozaki as applied to claims 61, 85 and 93 above.

In re claim 113, Ozaki does not disclose wherein a width of the channel forming region, a total width W_{pi} of the impurity regions, and a total width W_{pa} of regions between the impurity regions satisfy relationships $W_{pi}/W = 0.1$ to 0.9, $W_{pa}/W = 0.1$ to 0.9, and $W_{pi}/W_{pa} = 1/9$ to 9.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to establish a width of the channel forming region, a total width W_{pi} of the impurity regions, and a total width W_{pa} of regions between the impurity regions satisfy relationships $W_{pi}/W = 0.1$ to 0.9, $W_{pa}/W = 0.1$ to 0.9, and $W_{pi}/W_{pa} = 1/9$ to 9, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 105 USPQ 233. Note that the specification contains no disclosure of either the critical nature of the claimed width or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen width or upon another variable recited in a claim, the Applicant must show that the chosen width is critical. *In re Woodruf,* 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). In addition, the selection of a width of the channel forming region, a total width W_{pi} of the impurity regions, and a total width W_{pa} of regions between the impurity regions satisfy relationships $W_{pi}/W = 0.1$ to 0.9, $W_{pa}/W = 0.1$ to 0.9, and $W_{pi}/W_{pa} = 1/9$ to 9, is obvious because it is a matter of determining optimum process conditions by routine experimentation with a limited number of species of result effective variables. These claims are prima facie obvious

without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996)(claimed ranges or a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill or art) and In re Aller, 105 USPQ 233 (CCPA 1995) (selection of optimum ranges within prior art general conditions is obvious).

7. In re claim 117, Ozaki does not disclose wherein a total width of the carrier moving regions is within a range of 30 to 3,000 Å.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to establish a total width of the carrier moving regions is within a range of 30 to 3,000 Å, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 105 USPQ 233. Note that the specification contains no disclosure of either the critical nature of the claimed width or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen width or upon another variable recited in a claim, the Applicant must show that the chosen width is critical. *In re Woodruf*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). In addition, the selection of a width of the channel forming region, a total width of the carrier moving regions is within a range of 30 to 3,000 Å, is obvious because it is a matter of determining optimum process conditions by routine experimentation with a limited number of species of result effective variables. These claims are

prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996)(claimed ranges or a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill or art) and In re Aller, 105 USPQ 233 (CCPA 1995) (selection of optimum ranges within prior art general conditions is obvious).

8. In re claim 129, Ozaki does not disclose wherein the impurity element in the impurity regions is at a concentration of $1x10^{17}$ to $1x10^{20}$ atoms/cm^3.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to establish the impurity element in the impurity regions is at a concentration of $1x10^{17}$ to $1x10^{20}$ atoms/cm^3, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 105 USPQ 233. Note that the specification contains no disclosure of either the critical nature of the claimed concentration or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen concentration or upon another variable recited in a claim, the Applicant must show that the chosen concentration is critical. *In re Woodruf*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). In addition, the selection of the impurity element in the impurity regions is at a concentration of $1x10^{17}$ to $1x10^{20}$ atoms/cm^3, is obvious because it is a matter of determining optimum process conditions by routine experimentation with a limited number of species of

result effective variables. These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996)(claimed ranges or a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill or art) and In re Aller, 105 USPQ 233 (CCPA 1995) (selection of optimum ranges within prior art general conditions is obvious).

9. Claims 69 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozaki as applied to claims 61, 85 and 93 above, and further in view of Mei, Chi-Cu (U. S. patent 5,548,147).

In re claims 69 and 77, Ozaki does not show wherein the electric apparatus is selected from the group consisting of an LCD device, an EL device, a CL device, a TV camera, a personal computer, a car navigation apparatus, a video camera, and a portable information terminal apparatus including a cellular telephone and a mobile computer.

However, Mei, in the U. S. patent 5,548,147; figures 1 – 3J and related text, discloses that CMOS devices are conventionally used in LCD device, an EL device, a CL device, a TV camera, a personal computer, a car navigation apparatus, a video camera, and a portable information terminal apparatus including a cellular telephone and a mobile computer (Column 1, Lines 19 – 27).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the CMOS device of Ozaki in LCD device, an EL device, a CL device, a TV camera, a personal computer, a car navigation apparatus, a video camera, and a portable information terminal apparatus including a cellular telephone and a mobile computer, since as taught by Mei, CMOS are conventionally used in such devices.

10. Claims 97, 101, 105 and 109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozaki as applied to claims 61, 85 and 93 above, and further in view of Shiue et al. (U. S. patent 5,781,445).

In re claims 97 and 101; Ozaki does not disclose wherein the impurity element belongs to group 13 (boron).

However, Shiue, in the U. S. patent 5,781,445; figures 1 – 5 and related text, discloses that for forming a p-type device boron (group 13 element) is conventionally used (Column 4, Lines 24 – 26).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the impurity element belongs to group 13 (boron), since, as taught by Shiue, it is conventionally used to form p-type devices.

11. In re claims 105 and 109; Ozaki does not disclose wherein the impurity element belongs to group 15 (phosphorous or arsenic).

However, Shiue discloses that for forming n-type devices, phosphorous or arsenic (group 15 elements) are conventionally used (Column 4, Lines 27 – 30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the impurity element belonging to group 15 (phosphorous or arsenic), since, as taught by Shiue, it is conventionally used to form n-type devices.

Claim Objections

12. Claims 121 and 125 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

13. Applicant's arguments with respect to claims 61, 69, 77, 85, 93, 97, 101, 105, 109, 113, 117 and 129 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fernando L. Toledo whose telephone number is 571-272-1867. The examiner can normally be reached on Mon-Thu 7am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

George Fourson
Primary Examiner
Art Unit 2823

FToledo
14 April 2005

Continuation of Disposition of Claims: Claims withdrawn from consideration are 1-56,60,63,64,67,68,71,72,75,76,79,80,83,84,87,88,91,92,95,96,99,100,103,104,107,108,111,112,115,116,119,120,123,124,127,128,131 and 132.